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"Quick Install Guide"
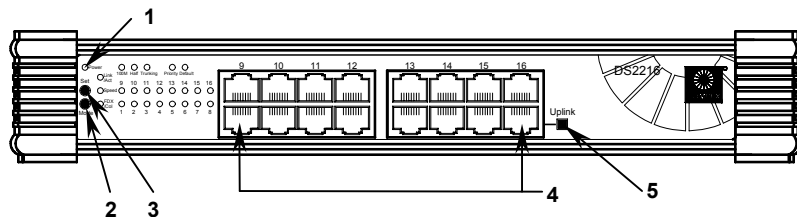
Compex
16-Port All 10/100
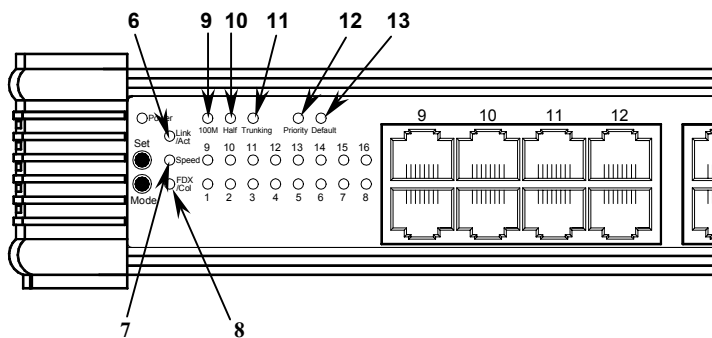## Switch

DS2216

Version 1.2

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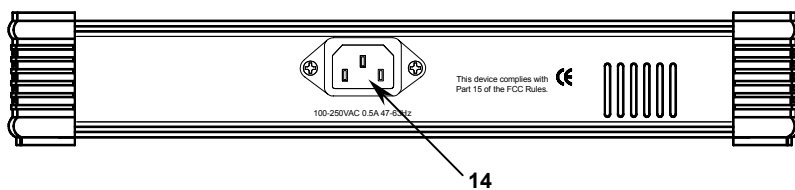
Figure 1: Front Panel View of DS2216

Figure 2: Front Panel View of DS2216 (Section)

Figure 3: Back Panel View of DS2216

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CONTENT

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"Quick Install Guide"
Compex 16-Port All 10/100 Fast Ethernet Switch
DS2216

1. Introduction

The key features of the Compex 16-Port All 10/100 Fast Ethernet Switch DS2216 are as follows

- Each port supports 10Base-T and 100Base-TX connection through auto-negotiation

- Implementing store-and-forward switching scheme

- Supports 10Base-T to 100Base-TX connectivity, allowing for progressive migration

- Support Full Duplex and Half Duplex for both 10Base-T and 100Base-TX connection at each port

- Highly optimized flow control for full and half duplex, evolved traffic priority services, flexible trunking capabilities

- Provides a dynamic memory sharing in/out buffer to ensure fast free packet storage and transmission, which greatly improves your network performance

- Easy to use and configurable without cable

- Port-trunking and priority support capability

2. Package Contents

- 1 Compex DS2216 Switch Unit
- 1 Power Cord
- 1 Quick Install Guide with warranty card

3. Panel Features
(Refer diagrams on inner cover)

	Features	Status and Indication
1	Power LED	Green: Light up when the power supply is ON.
2	Mode Button	Button to view port status and select option mode.
3	Set Button	Button to configure port mode.
4	16 RJ-45 Ports	• RJ-45, 100Base-TX/10Base-T ports; Auto-negotiation. • Configure as 16 UTP Ports or 15 UTP Ports plus 1 Uplink Port.
5	Uplink Button	• Uplink mode when button is pushed IN. • Normal mode when button is released OUT.
6	LINK/ACT LED	Select to view active ports link and activity status.
7	Speed LED	Select to view active ports connection speed.
8	FDX/Col LED	Select to view active ports duplex mode and collision status.
9	100M LED	Select to configure port speed.
10	Half LED	Select to configure port duplex mode.
11	Trunking LED	Select to enable/disable and select trunking ports
12	Priority LED	Select to set/reset/port priority.
13	Default LED	Select to reset switch to factory default setting.
14	Power Socket	Flexible power input (range 100-250VAC, 0.5A, 47-63Hz)

- **10/100 N-Way Auto-Negotiation or Forced Mode**
  By default, Compex DS2216 is configured to auto-negotiate for a highest possible operation mode between two nodes. Alternatively, the users are able to manually configure the speed (10/100Mbps) and the transmission mode (full/half duplex) of the ports.

- **10/100 Mbps Switching Function**
  A cost-effective 100Mbps and 10Mbps switching function in single unit. Divides a network into smaller shared network groups, eliminating unnecessary traffic, multiplying available bandwidth, and relieving congestion on server paths.

- **10/100 Mbps Integration**
  16 high-speed ports permit Ethernet workgroups to communicate with Fast Ethernet users in a single integrated network, and share servers connected to the dedicated 100Mbps ports. Port expansion is easy by connecting several switches and hubs together through dedicated uplink port.

- **Linking Up 10Base-T and 100Base-TX Technology**
  One-time migration from 10Base-T to 100Base-TX technology can be very costly. The Compex DS2216 addresses this problem by allowing existing 10Base-T networks to communicate with 100Base-TX networks. Performance does not degrade the switch as each 10Base-T/100Base-TX segment continues to operate at its own speed. Enterprise networks can be progressively upgraded, thus gradually phasing out older segments of the network without sacrificing interconnectivity or performance.

4. Specifications

•	Industry Standards	Complies with IEEE802.3 10Base-T standard, IEEE802.3u 100Base-TX standard, FCC Class A, CE Mark.
•	Interface	Supports 16 10/100 Mbps ports (RJ-45, UTP): Half/Full Duplex modes at 10 Mbps and 100 Mbps.
•	LED Indicators	LED indicators for system Power, Link, Speed (10/100Mbps), Duplex status, priority, trunking and Port (Transmit/ Receive) traffic.
•	Speed Selection	N-way Auto-negotiation or Forced Mode.
•	Link Distance	• 100Base-TX: Requires data grade (Category 5) UTP cable. Segment length can be up to a maximum of 100 meters on every port. • 10Base-T: Requires (Category 3, 4 and 5) UTP cable. Segment length can be up to a maximum of 100 meters on every port.
•	Forwarding Method	Store-and-Forward.
•	Dynamic Address Learning/ Filtering	Yes.
•	Power Supply	Internal power supply is provided with voltage ratings of 100VAC to 250VAC, 47~63 Hz.
•	Environment Requirements	Operating Temperature: 0°C to 50°C Storage Temperature: -20°C to 70°C Operating Humidity: 10% to 80% RH Storage Humidity: 5% to 90% RH [RH = Relative Humidity]
•	MAC Address Table	16K

●	Memory Buffer	4M bits
●	Flow Control	IEEE 802.3x for full duplex mode. Back pressure for half duplex mode.
●	Physical Dimension	302mm x 123mm x 53mm (L x D x H)

5. Installation of Compex DS2216

Compex DS2216 can be installed as a desktop unit. Below list the installation steps.

1. Unpack the unit.

2. Choose a location near the devices to be connected and close to an electrical outlet. Put the unit at a clean, smooth, level and sturdy place. Make sure there is enough clearance around the switch to allow attachment of cables, power cord and adequate air circulation.

3. Plug the power cord into the back of the unit and power on the unit. Check that the power LED indicator on the unit is lighted up.

4. The unit is now ready to operate.

6. Implementation

Compex DS2216 can be expanded easily by connecting several switches and hubs together through Uplink port. See Figure A.
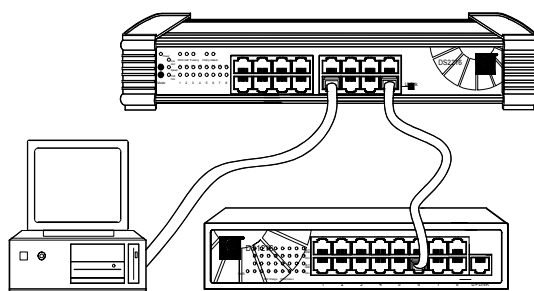
Figure A

7. Buttons and LEDs Feature Description

- **Button operations**
  There are two buttons on Compex DS2216 panel, "**Set**" and "**Mode**". They are for setting and resetting enhanced functions.

  Two function groups, namely **Status LED** group and **Option Mode LED** group, can be selected from the **Mode** button:
  Status LED group: to select general port operation status
  Option Mode LED group: to configure the ports and set trunking/ VLAN operation

  Mode Button - This button let you do the following:
  - Select an option mode to configure for a port.
  - View all ports pre-set status for a particular mode.
  - Display Link/Act, Speed and FDX/Col status of all active ports.

  Press once the LED will light up at the first Option LED.
  Press again will jump to the next option.
  Press several times to cycle through all the modes.

Set Button - This button let you do the following:
- Select a port to set/reset an option mode.
- For trunking mode, select/deselect trunk group ports.
- Save and update changes.

After Mode button points to the desired option, press Set button once to go to port selection mode.

To select a port number, press Set button several times till it jump to the desired port. To set and save the mode to that port, press the Set button and hold it down for about 3 seconds until the port LEDs flash once.

- **LEDs**
  Status LEDs
  - Link/Act: Display all active ports link and activity status.

  - Speed: Display all active ports speed.
             ON for 100Mbps, OFF for 10Mbps.

  - FDX/Col: Display all active ports Duplex mode and collision status.
               ON for Full-Duplex mode, OFF for Half-Duplex mode.
               Blinks indicate collision active only when port is operating in Half-Duplex mode.

  Option Mode LEDs
  - 100M: Set/reset/view pre-set speed for all ports.

  - Half: Set/reset/view pre-set duplex mode for all ports.

  - Trunking: Set/reset/view pre-set port trunking group(s).

  - Priority: Set/reset/view pre-set priority mode for all ports.

  - Default: Reset all ports configuration to factory defaults.

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- **How to view all active ports Link/Act status**
  To view the currently active ports Link and Activity status, press the Mode button several times until the Link/Act LED lights up.
  All ports LEDs that light up and/or blinking are the link and activity status of these active ports.

- **How to view the connection speed of those active port**
  To view this, press Mode button several times until the Speed LED lights up. Those ports LEDs that light up indicate that they are connect at 100Mbps speed. Those that did not light up are either inactive or not connected.

  If there are active ports but their LEDs did not light up, this indicates that they are connected at 10Mbps speed.

- **How to view which active ports are connected at Full or Half Duplex mode**
  To view this, press the Mode button several times until the FDX/Col LED lights up. Those ports LEDs that light indicate they are connected at Full-Duplex mode. Those port LEDs not lighted up are either inactive or not connected.

  If there are active ports but their LEDs did not light up, then they are connected at Half-Duplex mode.

8. Advanced Configuration on Compex DS2216

- **How to force a certain port to 100Mbps speed and Half or Full-duplex mode**
  This is a 2 steps operation.

  Note
  To configure a port to auto-negotiation mode, turn OFF that port LED in both 100M and Half mode setup.

  1a.
  Press the Mode button several times until the 100M LED lights up. Check the LED for that port number you want to set.

  If the port LED lights up it is already forced to 100Mbps mode. Skip and goto step (2a). Otherwise, proceed to (1b).

  1b.
  Now press the Set button once will jump to port select. Port #1 LEDs lights up first. Press the Set button again to jump to next port #2. Continue to press several times until the desired port LED lights up.

  To set this port, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once. When successful, this port LED will remain lighted up.

  2a.
  Next press the Mode button until the Half LED lights up. Check the LED for the port number you want to set.

  If it is not lighted up it is in Full-Duplex mode. Do nothing if this is the mode you want to operate. Setup is completed.

  If you want Half-Duplex mode goto to (2b).

  If it is lighted up, it is already in Half-Duplex mode. Do nothing if this is the mode you want to operate. Setup is completed.

  If you want Full-Duplex mode goto (2b).

2b.

Now press the Set button once and it will cycle to the next port. Port #1 LED lights up first. Press the Set button again to jump to next port #2. Continue to press several times until the desired port LED lights up.

To set this port, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once. When successful this port LED will remain lighted up for Half-Duplex mode and if Full Duplex mode setup the LED will turn OFF.

- **How to force a certain port to 10Mbps speed and Half-duplex mode**
  Note
  10Mbps and Full-Duplex combination is not supported.

1a.

Press the Mode button several times until the Half LED lights up. Check the LED for that port number you want to set.

If the port LED lights up it is already forced to Half-Duplex mode. Skip and go to step (2a). Otherwise, proceed to (1b).

1b.

Now press the Set button once, it will cycle to the next port. Port #1 LED lights up first. Press the Set button again to jump to the next port. Continue to press several times until the desired port LED lights up.

To set this port, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once. When successful, this port LED will remain lighted up.

2a.

Next press the Mode button until the 100M LEDs lights up. Check the LED for that port number you want to set.

If it is not lighted up it is already in 10Mbps mode. Do nothing. Setup is completed.

If it lights up, go to (2b) to toggle to 10Mbps mode.

2b.
Press the Set button once and it will cycle to the next port. Port #1 will light up first. Press the Set button again will jump to next port #2. Press several times until the desired port LED lights up.

To set this port, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once. When successful, this port LED will turn OFF.
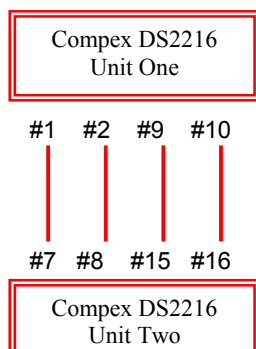
Setup complete.

100M LED	Half LED	Port Status
ON	ON	Forced to 100Mbps speed and Half-Duplex mode
OFF	ON	Forced to 10Mbps speed and Half-Duplex mode
ON	OFF	Forced to 100Mbps speed and Full-Duplex mode
OFF	OFF	Reset to normal auto-negotiation mode

Table 1: Force Port Speed and Duplex mode

- **How to set up and connect Compex DS2216 for trunking**
  1. First decide how many trunk ports you plan to setup. You can choose to use ports from any trunk group, but the two units to trunk must be Compex DS2216.

  2. Next, prepare the network cables to connect between these two Compex DS2216 switches. The network cables must be category 5 and cross-connect (MDIX). Ensure the proper twisted wire pairs are connected to the correct RJ45 connector pins. See the Appendix for correct wiring details. Each cable can be up to a maximum of 100 meters long.

  3. Connect them up as shown below. Assuming 4 ports group trunking is selected. Compex DS2216 unit one uses ports from Group 1 and Compex DS2216 unit two uses ports from Group 2.

```
            ┌─────────────────────┐
            │   Compex DS2216      │
            │     Unit One         │
            └─────────────────────┘

             #1    #2    #9    #10
              │     │     │     │
              │     │     │     │
              │     │     │     │
             #7    #8   #15   #16
            ┌─────────────────────┐
            │   Compex DS2216      │
            │     Unit Two         │
            └─────────────────────┘
```

  4. Goto "How to enable and select trunking ports" to enable and select these trunking ports.

  5. Power ON both units. Compex DS2216 is now ready to operate.

- **How to enable and select trunking ports**
  This Switch supports 2 trunking groups. For each trunking group, you can select 2, 3 or 4 pre-desired ports groups.

  Group 1 selectable port groups are [2,10], [2,9,10], [1,2,9,10], group 2 selectable port groups are] [7,15]; [7,8,15]; [7,8,15,16].

  1. Press the Mode button several times until the Trunking LED lights up. Check the LEDs for that port group you want to set.

     If the ports LED lights up it is already forced to Trunking mode. Do nothing. Otherwise, proceed to step 2.

  2. Now press the Set button once will jump to port select. Continue to press Set button several times until the desired ports group LEDs lights up.

     To set this ports group, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once. When successful, the port LEDs in this group will remain lighted up.

The default operation modes for all trunking ports are 100M, Full Duplex. Refer to the table shown below:

See [Table2 – Single Trunk Grouping] and [Table 3 – Dual trunks combinations] below.

Trunking Group	Trunk Ports	Speed	Active Ports
Group 1	2	400Mbps	2,10
	3	600Mbps	2,9,10
	4	800Mbps	1,2,9,10
Group 2	2	400Mbps	7,15
	3	600Mbps	7,8,15
	4	800Mbps	7,8,15,16

Table 2: Single Trunk Grouping

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Middle Compex DS2216[B] possible trunk combinations	Group 1			Group 2		
	Number of trunk ports					
	2	**3**	**4**	**2**	**3**	**4**
A	X			X		
B	X				X	
C	X					X
D		X		X		
E		X			X	
F		X				X
G			X	X		
H			X		X	
I			X			X

Table 3: Dual Trunks Combinations

- **How to enable priority mode for a port**

  Compex DS2216 supports advanced traffic priority features. It provides two levels of priority: normal and high priority. Packets in high priority mode will arrive sooner at the destination MAC address.

  1. Press the Mode button several times until the Priority LED lights up. Check the LED for that port number you want to set. If the port is lighted up it is already enabled. Do nothing. Otherwise, proceed to step 2.

  2. Now press the Set button once. Port #1 LEDs lights up. Press the Set button again to jump to next port #2. Continue to press several times until the desired port LED lights up.

  To enable this port, press the Set button and hold it down for about 3 seconds until all ports LEDs flash once.

  When successful, this port LED will remain lighted up.

- **How to set Default Mode**
  1. Press the Mode button several times until the Default LED lights up.

  2. Now press the Set button and hold it down for about 3 seconds until all ports LEDs flash once.

  Now the switch is restore to Factory Default Setting.

  The factory default setting of Compex DS2216 is No trunking, Normal Priority, each port runs in Auto-Negotiation mode.

- **How to check which ports have been pre-configured for what modes**
  To view this, do the following.

  1. Press the Mode button several times till the desired option LED lights up.

  2. View all the port LEDs. Any port that lights up indicates that port is setup or enabled for that mode.

  3. For trunking mode, the group port LEDs will be displayed.

9. Troubleshooting

LED Indicators

The LEDs of Compex DS2216 can function as useful troubleshooting aids.

If Power LED does not light up, check that:

- Plug/cord is properly inserted into the socket.
- The ON/OFF switch is turned ON.

If **LINK/ACT** LED does not light up, check that:

- Wire pairs connected to RJ-45 plug are correct.
- RJ-45 plug is fully inserted until hear a click sound.

The PC is powered-up.

If **FDX/Col** LED does not light up for Full Duplex mode, check that:

- The device is configured as Full Duplex mode.

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FCC NOTICE: This device has been tested and found to comply with the limits for a **Class A** digital device, pursuant to **Part 15 of the FCC Rules**. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
- Increase the separation between the computer and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC Compliance Statement: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)   This device may not cause harmful interference, and

(2)   This device must accept any interference received, including interference that may cause undesired operation.

ICES 003 Statement

This Class A digital apparatus complies with Canadian ICES-003.

Gost NOTE: This device (apparatus, equipment) complies with the radio interference limits established for Class A equipment in accordance with GOST R 51318.22-99 (CISPR 22-97) and shall not be used in dwelling houses, commercial and industrial districts with low electric power consumption and be connected to low-voltage distributions electric supply networks.

DECLARATION OF CONFORMITY: *Compex, Inc. declares that the product:*

Product Name: *Compex 16-Port All 10/100 Switch* **Model No.**: DS2216 *conforms to the following Product Standards:* Radiated Emission Standards: EN55022A, FCC Part 15 Class A; Conducted Emission Standards: EN60555Pt2 conducted emission; EN55022A conducted emission, LVD 60950 standard, FCC Part 15 Class A; Immunity Standards: IEC 801-2; IEC 801-3; IEC 801-4; Low Voltage Directive: EN60950. *Therefore, this product is in conformity with the following regional standards:* **FCC Class A** — following the provisions of FCC Part 15 directive; **CE Mark** — following the provisions of the EC directive.

Manufacturer's Name: *Compex, Inc.* Address: *4051 E. La Palma, Unit A,* *Anaheim, CA 92807, USA* *European Contact:* ReadyLINK Networktechnology GmbH, *Technical Support* Albert Einstein Straße 34/M21, 63322 Rödermark, Germany [Fax: +49 (60) 749-0668]	17th May, 2002 _____ Shi Jia Xiang R & D Manager

English   Compex 16-Port All 10/100 Switch
DS2216

WARRANTY REGISTRATION CARD [M-0088-V2.3C] COMPEX® networks@work

You can register via Internet at: **http://www.cpx.com** *or* **http://www.compex.com.sg**

Or E-mail: **support@compex.com.sg** with the following information:

To activate the warranty, please complete this card and return to Compex within ninety (90) days of purchase date.

Product:	Purchase Date:		Revision:		Serial No:

Name:		Title:		E-mail:

Company:	Dept:

Address:	City:

Postal/Zip Code:	State:	Country:

Phone: ( )	Extn:	Fax: ( )

Computer in which this product is installed?	Model:	Serial No:

Network protocol (*Check all that apply*):
❏ TCP/IP ❏ IPX/ODI ❏ XNS ❏ OST ❏ DLC ❏ DECnet
❏ NDIS ❏ SNA ❏ NBP ❏ Other:

Network Operating System (*Check all that apply*):
Novell NetWare: ❏ 3.X ❏ 4.X ❏ 5.X   SCO Unix: ❏ Openserver Ver:___
Microsoft Windows: ❏ NT4.0 ❏ 95 ❏ 98 ❏ Win 2000
Linux: ❏ Red Hat Ver: ___ ❏ SUSe Ver:___ ❏ Others: ___ Ver: ___
Others NOS: ___ Ver: ___

Applications used on network processing (*Check all that apply*):
❏ Desktop Publishing ❏ Word Processing ❏ Accounting
❏ CAD/CAM ❏ Spreadsheet ❏ Database Management
❏ E-mail ❏ Other:

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Note:

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For purchases outside U.S.A. and Canada, please fax to **Compex Systems Pte Ltd** at **(65) 6280-9947**

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